

REMARKS

The present amendment is in response to the second non-final office action mailed March 3, 2006. In the March 3, 2006 office action, claims 3-5, 13-16, 23, 27 and 31-36 were withdrawn from consideration following a restriction requirement. An action on the merits issued on claims 1, 2, 6, 8-12, 17-22, 24-26, 28-30 and 37.

Claims 1, 2, 6, 8-12, 17-22, 24-26, 28-30 and 37 were all under rejected under 35 USC 103(a) for being obvious over Campagnolo (USP 4,788,040) alone, or in view of any one of Fukuda (USP 4,038,366), Kane (USP 4,254,291), Simon (USP 4,839,209) and Nakamura (USP 5,498,754).

Amendments to the Claims

Claim 6 has been canceled. Independent claims 1, 34 and 37 have been amended to recite that (i) the tray is flat; and that (ii) the tray is formed from steel¹ with at least one of a corrosion-resistant coating and a corrosion-resistant covering.

Appeal of Withdrawal of Claim 34 from Consideration

Independent claim 34 was withdrawn from consideration on grounds that while claim 1 “requires that all of the superstructures are formed from corrosion resistant materials”, claim 34 only requires that the “at least one superstructure (is) formed of corrosion resistant materials.” This distinction pointed to by the Examiner is completely artificial. In claim 34, only “at least one superstructure” is being claimed, and it is said to be formed of “corrosion resistant material”. No superstructures are being excluded from this group. Accordingly, it is requested that at least the claim 34 also be considered by the Examiner on the merits in the next office action.

Rejection over the Prior art

It is submitted that the pending independent claims 1, 34 and 37 all define over the prior art. The reasons for this should be evident in light of the following explanations of the prior art, and its teachings (or lack thereof).

(1) USP 4,788,040 (Campagnolo et al.) (Primary Reference)

On page 3 of the March 3, 2006 office action, the Examiner argued that Campagnolo substantially discloses the claimed invention, “except for the specific recitation that the tray and superstructures are all constructed from corrosion resistant materials.” With regard to this missing feature, the Examiner argued:

“Clearly from the entire disclosure of the Campagnolo et al reference, one having ordinary skill in the art would have found it to have been obvious at the time of the invention, to provide all of the internal structures within the column that contact corrosive materials, including the superstructures on the trays, with corrosion resistant materials of construction or corrosion resistant materials.

First, it is respectfully submitted that the Examiner is mistaken. One skilled in the art simply would not provide the tray of the ‘040 reference with corrosion-resistant material coating or covering.

In particular, USP 4,788,040 teaches away from forming trays of steel with a corrosion-resistant coating and/or a corrosion-resistant covering. This is because a tray formed from steel with a corrosion-resistant coating and/or a corrosion-resistant covering cannot be welded. The ‘040 reference specifies a number of times that welding is required:

At Column 5, lines 52 to 55, the ‘040 reference states: “... All of the risers 60 and 62 are mounted in a conventional manner within the upper and lower distributor trays such as welding the members in position ...”

At Column 6, lines 9 to 11, the ‘040 reference states: “... a conventional type of tack fillet weld 88 is shown to hold the nut 86 in closed position. ...

At Column 9, lines 5 to 8, the ‘040 reference states: “... the vapor passage means in the upper distributor tray are welded in position, ... and risers in the lower distributor tray are welded in position.”

¹ It is understood from the present specification that the term “steel” does not cover what is commonly referred to as ‘stainless steel’.

All these passages clearly disclose that the vapor passage means and risers are welded to the respective tray. One skilled in the art will clearly recognize that the trays cannot be formed from steel with a corrosion-resistant coating and/or a corrosion-resistant covering because welding will not be possible if the tray was so made. Similarly, the vapor passage means and risers (which the Examiner considers “superstructure” within the meaning of the claims) cannot be made out of corrosion-resistant material, either.

Second, the alleged teachings of USP 2,924,441, referred to in the “Background” section of the ‘040 reference, do not render it obvious to modify Campagnolo ‘040 to have corrosion resistant materials. In the March 3, 2006 office action, the Examiner refers to column 2, lines 10 to 16 of the ‘040 reference in support of the proposition that the ‘040 reference “discloses that it is well known within the art to provide surfaces within a column that are subjected to corrosive materials with a corrosion resistant coating, such as glass or Teflon.” The Examiner’s reliance on this passage is misplaced. In its “Background” section, Campagnolo ‘040, at column 2, lines 14-16, reads: “(In USP 2,924,441) emphasis is on mechanical construction of such a nature as to permit application of a corrosion resistant coating such as glass or Teflon.” These comments are included in the ‘040 reference to help distinguish the ‘040 invention from US 2,924,441. However, nothing in this passage suggests that one can or would apply a corrosion resistant coating where welding is required. It is submitted that one skilled in the art would understand from this passage that USP 4,788,040 does not, in any way, embrace employing a corrosion resistant coating to a tray that is to be welded.

Finally, and in any event, it is noted that the ‘040 reference does not disclose a corrosion-resistant column tray. The ‘040 reference is merely directed to the manner in which liquid introduced to the reactors is distributed with respect to the fixed bed contained therein (see for instance column 1, lines 9 to 12, column 2, lines 34 to 35 (... to provide an improved distributor design ...), column 2, lines 38 to 44 (... the number of discrete liquid streams ... is maximized ... ensure good distribution ... to obtain equilibrium liquid distribution), column 2, lines 49 to 52 (... the liquid flow rate of each stream is the same ...), column 7, lines 42 to 50 (... the overall objective is to maximize the number of discrete liquid streams ...)).

In view of the foregoing, it is submitted that one skilled in the art would not modify the ‘040 reference to arrive at the invention of any of the pending independent claims.

The Examiner points to a number of references, any one of which when combined with Campagnolo allegedly renders obvious the claims. However, a close inspection of these shows that this is not the case.

(2) USP 4,038,366 (Fukuda et al.)

This reference, entitled “Method for Removing Hydrogen Sulfide” appears to be non-analogous art. It is therefore first submitted that one skilled in the art would not turn to Fukuda, given the Campagnolo ‘040 reference.

The Fukuda ‘366 reference merely relates to a chemical process whereas Campagnolo ‘040 is directed to the manner in which the liquid introduced to the reactors is distributed with respect to the fixed bed contained therein. These references are totally unrelated and so it is submitted that the Examiner has improperly attempted to argue obviousness by simply randomly picking bits and pieces of the prior art in the knowledge of the invention in order to show every feature of the claimed invention regardless of its content. This clearly does not make a prima facie of obviousness.

With respect to the ‘366 reference, the Examiner referred to column 2, lines 40 to 43, in support of the argument that this reference discloses “internal contact surfaces within a column or reaction vessel with corrosion resistant materials of construction or corrosion resistant coatings of the type recited by applicant’s (then pending) claims.” The above mentioned passage cited by the Examiner contains merely a general reference that corrosion resistant materials are used in absorption towers. It is noted, however, that one skilled in art would know that columns and trays made of corrosion resistant materials have very special design features. As mentioned above, one skilled in the art would recognize that the design features (e.g., welding) disclosed in Campagnolo ‘040 reference would exclude the use of corrosion resistant materials.

Furthermore, Fukuda ‘366 has neither an explicit nor an implicit hint to use the corrosion resistant material for the design of the Campagnolo reference. Since, Campagnolo ‘040 excludes the use of corrosion resistant materials, substantial constructional changes would be necessary to use the “corrosion-resistant” teachings of Fukuda. And one skilled in the art would not know to change the Campagnolo ‘040 construction, without the knowledge of the present invention.

In sum, the Examiner's assertion that one skilled in the art would combine these references in order to arrive at the present invention can only come from impermissible hindsight after viewing the present invention. One skilled the art would never consider this combination in the absence of any explicit or implicit hints and the non-obvious constructional changes needed to arrive at the invention. For the foregoing reasons, it is submitted that (a) one skilled in the art would not, and could not, modify Campagnolo '040 as taught by Fukuda '366; and (b) only by hindsight could one arrive at such a combination.

(3) USP 4,254,291 (Kane)

This reference, entitled "Allylic Rearrangement Process", appears to be non-analogous art. It is therefore first submitted that one skilled in the art would not turn to Kane, given the Campagnolo '040 reference.

In citing this reference, the Examiner referred to column 5, lines 31 to 40. This passage merely contains a general statement that corrosion resistant materials are to be used for certain equipment. Therefore the same arguments made above with respect to Campagnolo '040 in view of Fukuda '366 are pertinent to Campagnolo '040 in view of Kane '291.

(4) USP 4,839,209 (Simon)

In citing this reference, the Examiner referred to column 1, lines 5 to 60. However, at column 1, lines 28 to 33, this reference clearly states that the "metal constructions plated with synthetic resins.....have (certain disadvantages)". Thus, contrary to the Examiner's assertion, this reference, too, teaches away from a metal tray with corrosion resistant coating. In fact, at col. 1, lines 61 et seq., the Simon '200 reference clearly states that synthetic resins are to be used, that "these synthetic resins have a considerably higher chemical resistance that, for example, weight-bearing constructions of steel... ". Thus, the Simon '209 reference clearly teaches away from a steel construction, as recited in independent claims 1, 34 and 37. Accordingly, it is submitted that (a) one skilled in the art would not modify Campagnolo '040 as taught by Simon '209 and (b) only by hindsight could one arrive at such a combination.

(5) USP 5,498,754 (Nakamura)

This reference, entitled "Process For Refining Crude Fluoroalkylsulfonic Acid With The Use Of Water Allylic Rearrangement Process", appears to be non-analogous art. It is therefore submitted that one skilled in the art would not turn to Nakamura '754, given the Campagnolo '040 reference.

In citing this reference, the Examiner referred to column 9, lines 3 to 14. This passage merely contains a general statement that corrosion resistant materials are to be used for the rectification mechanism. Therefore the same arguments made above with respect to Campagnolo '040 in view of Fukuda '366 are pertinent to Campagnolo '040 in view of Nakamura '754.

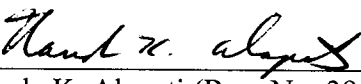
In view of all of the foregoing, it is submitted that the pending claims 1, 34 and 37 are allowable over the cited prior art. With respect to all claims not specifically mentioned, it is submitted that these are patentable not only by virtue of their dependency on their respective base claims and any intervening claims, but also for the totality of features recited therein.

Reconsideration of the application is requested. An early notice of allowance is requested so that the application may proceed to issue.

No fee is believed to be due for this submission. Should a fee be required, the Director is authorized to charge any such fee to Womble Carlyle's Deposit Account No. 09-0528.

Respectfully submitted,

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